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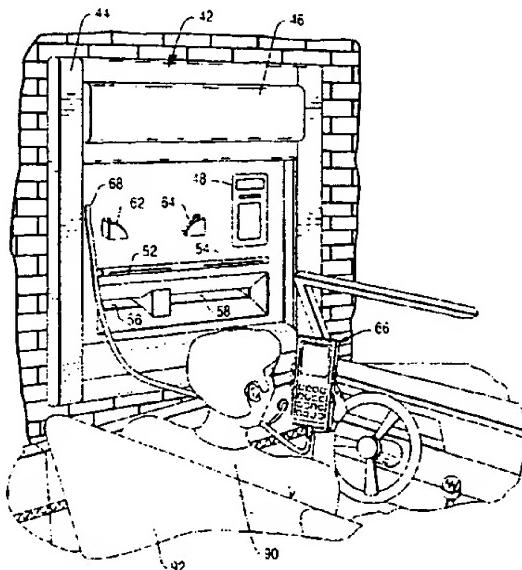
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(54) Automated teller machines.

(57) An automated teller machine (ATM) includes a hand-held remote control unit (66) attached to the user interface (42) of the ATM by an armoured cable sheathed in a plastics material. The remote control unit (66) contains a small screen, which may be a liquid crystal display, and a key pad that may be in a standard PIN pad 4 x 4 layout. The user interface (42) includes a holder (62,64) for removably retaining the control unit (66) on the user interface (42). By removing the control unit (66) from the user interface (42), a person in a wheelchair or a driver in a vehicle has easy access to the key pad and the screen provided on the control unit (66).

FIG. 3



EP 0 661 676 A1

The present invention relates to automated teller machines (ATMs).

Automated teller machines and similar interactive business devices require a user interface in order to interact with a user. To date there have been two major concerns with the design of such user interfaces. First, there is the question of privacy, that is, being able to enter a personal identification number (PIN) or a password without being observed by an unauthorized person. Second, there is the question of ready or convenient access, particularly with respect to disabled persons, for whom access is important and may be required by law.

Automated teller machines have become very widely used during the past few years, including the use of such machines, both in an "inside" environment, such as the lobby of a bank or other financial institution, and in a "through-the-wall" environment, in which a machine is mounted in a wall structure out of doors. A through-the-wall ATM may be used in a drive-up environment in which a driveway is provided next to the ATM, so that a vehicle can be driven up to the ATM to enable the driver to operate the ATM through the vehicle window, while remaining seated within the vehicle.

In addition to the concerns mentioned above, certain additional concerns have arisen in connection with the use of ATMs. First of all, users frequently have considerable difficulty in reading the screen of an ATM because of sunlight and artificial light creating problems of glare. Second, access to the various elements of a user interface of an ATM used in a drive-up environment may be difficult since a driver will normally stop the vehicle in a position in which the distance from the vehicle window to the ATM user interface is no closer than approximately 40 centimetres. Third, access to these elements may be further limited as a result of handedness on the part of the driver. Finally, in a drive-up environment, the degree to which a driver is exposed to the elements is, of course, related to the length of interaction while the driver's vehicle is parked at the ATM.

It is an object of the present invention to provide an ATM which alleviates some or all of the concerns discussed above.

According to the invention there is provided an automated teller machine (ATM) having a user interface, characterized by a remote control unit which is connected to the ATM by an armoured cable and which can be held by a user, said control unit including a keyboard for entering data, and further characterized by a holder for removably retaining said control unit on the user interface.

Preferably, the control unit of an ATM in accordance with the invention includes a display screen on which information is provided to a user to assist in carrying out ATM transactions.

It should be understood that in an ATM in accordance with the present invention, the hand-held remote control unit is designed to provide comfortable and easy access to keys (including function keys) and a screen that normally appear on the user interface or fascia of an ATM. This remote control unit enables a user to input confidential data and to view and select transaction options, as can be done with the standard ATM interface. The remote unit facilitates faster transactions than can normally be accomplished using a conventional drive-up or other type of ATM, because the proximity of the decision-making keys and the clarity of the display when viewed from close up contribute to convenience of use. The remote unit can be lifted and held at virtually any height, allowing wheelchair-bound ATM users full access to the control unit. Furthermore, the fact that the personal identification number (PIN) entry and option selection can take place within the shelter of a vehicle in a drive-up environment means that the effects of weather on user comfort are significantly lessened.

Two embodiments of the present invention will now be described by way of example with reference to the accompanying drawings, in which:

Fig.1 is a perspective view of a user interface of an ATM designed for use in a drive-up environment;

Fig.2 is a perspective view of a hand-held unit of the ATM of Fig.1;

Fig.3 is a perspective view, showing a user in a vehicle in the process of carrying out a transaction using the hand-held unit of Fig.2; and

Fig.4 is a perspective view, showing another embodiment of the invention, comprising an ATM designed for use in an in-lobby environment.

Referring to Fig.1, there is shown therein a user interface 40 of a drive-up ATM 42 constructed in accordance with the present invention. A moulding 44 extends around the edges of the user interface 40 to overlap the wall 41 in which the ATM 42 is located. An illuminated sign 46 is located at the top of the interface 40. A card reader 48 having a card-receiving slot 50 is located below the sign 46 and receives a user's identifying card at the commencement of a transaction. Located generally below the card reader 48 are two slots 52 and 54. An envelope may be offered to the user by the ATM 42 through the slot 52 for use in making a deposit. The slot 54 is a receipt slot that enables a printed record of the transaction to be offered to the user. Located below the slot 52 is a slot 56 for receiving deposits made by the user. Located below the slot 54 is a slot 58 through which cash is dispensed to the user in the case of a withdrawal transaction. Located above the slots 52 and 54 on the interface 40 is a bracket or holder 60 that is shown as comprising two corner retaining elements 62 and 64 for retaining on the interface 40 a remote control hand-held unit 66. The unit 66 is disposed in the bracket 60 on the interface 40 in a horizontal orientation.

tion and is operatively connected to the interface 40 and the ATM 42 by a cable 68 that is armoured to prevent its being removed from the ATM 42 and that is preferably coated with a suitable plastics material that will prevent damage to a vehicle if the cable 68 engages some portion of the vehicle as the hand-held unit 66 is being brought into the interior of the vehicle.

The hand-held remote control unit 66 is shown in greater detail in Fig.2 and includes a display 70 on which instructions for carrying out a transaction and other information may appear. The display 70 may be of the liquid crystal type or other suitable type. Located below the display 70 on the unit 66 is a keyboard 72, comprising a plurality of keys 74. Certain of the keys 74 may be function keys which are used to initiate desired transactions of the ATM 42. Other keys 74 may be numeric keys or alphanumeric keys. The hand-held unit 66 is provided along its sides 76 and 78 with a plurality of recesses 80 for receiving fingers of a user's hand and thereby facilitating the secure gripping of the unit 66 by the user. On the opposite side of the unit from the display 70 and the keyboard 72 is located an indicator 82 that may be a light of the LED type. This light provides a signal to the user when appropriate, as when the user is being directed to pick up the unit 66 and bring it into the vehicle. If desired, the light may flash and may be accompanied by an audible signal from a suitable device located either within the unit 66 or elsewhere in the ATM, to provide an additional indication to the user. The bracket 60 and the unit 66 should desirably be configured so that the unit 66 will properly fit within the bracket 60 only when its side containing the indicator 82 is facing outwardly towards the user, as shown in Fig.1.

In Fig.3, a user 90 in a vehicle 92 is shown using the drive-up ATM 42 of the present invention. The user is grasping the remote control hand-held unit 66 and the connecting cable 68 extends between the user interface 42 and the unit 66. It will be seen that the display 70 and the keyboard 72 can be brought as close to the user as desired, as contrasted with the situation when the display and the keyboard are located on the user interface of a known ATM. It will also be seen that the unit 66 can be held equally well by either a right-handed or a left-handed user 90 in the vehicle 92. This provides a clear advantage over prior art drive-up ATMs in which ease of operation with respect to right-handedness and left-handedness is not equal.

Shown in Fig.4 is a free-standing version 100 of the ATM. In Fig.4, parts similar to corresponding parts in the embodiment of Figs.1-3 are given the same reference numbers. In the user interface 40 there is provided a card reader 48 having a card-receiving slot 50 which receives a user's identifying card at the beginning of a transaction, the reader 48 being arranged to read information carried by the card for the purpose of enabling a determination to be

made as to whether the card is valid. The receipt slot 54 enables a receipt to be offered to a user. Deposits made by the user are inserted in the slot 56. Cash is dispensed to the user through the slot 58. Above the slots 56 and 58 on the user interface 40 is a holder 60 for holding the hand-held remote control unit 66 which is operatively connected to the control panel 40 and to the ATM 100 by the armoured cable 68. The hand-held unit 66 can be of the same construction as described above in connection with Fig.2. If desired, an optional display 102 may be included on the user interface 40 of the ATM 100. The optional display 102 may, for example, advertise services provided by the financial institution on whose premises the ATM 100 is located.

Operation of either the drive-up ATM 42 or the free-standing ATM 100 of the present invention is initiated by insertion of a user's identifying card into the slot 50 of the card reader 48. If the identifying card is determined by the ATM to be a valid card, on the basis of information read from the card by the card reader 48, then in the case of the ATM 42 the indicator 82 on the unit 66 is energized, signalling to the user that the unit 66 should be picked up from the user interface 42 and brought into a convenient position for the user's use in performing the transaction. In the case of the ATM 100, following a determination that the identifying card is valid, the optional display 102 could be used to advise the user to pick up and use the unit 66 or to use the unit 66 while still located in the holder 60. The transaction is then carried out in a normal manner, commencing with entering a PIN by the user, using the keyboard 72, to establish the user's identity, and continuing with use of appropriate function keys and other keys on the keyboard 72 to complete the desired transaction. When the transaction is completed, the user must place the hand-held unit 66 back in the bracket 60 in the proper orientation before the user's identifying card will be returned from the card reader 48 in the user interface 40.

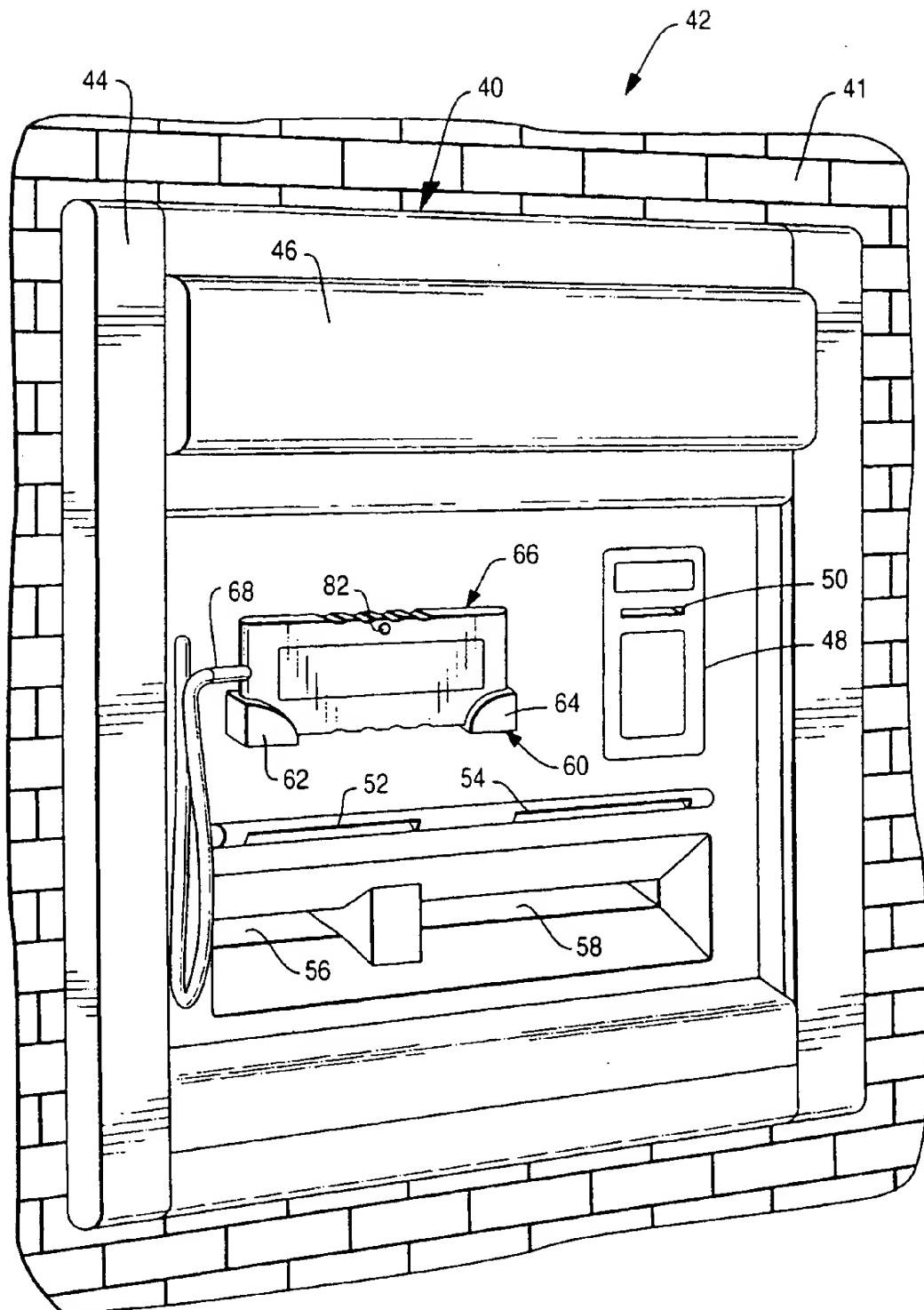
In an alternative arrangement to those described above, the remote control unit 66 can be used as a replacement solely for the PIN pad.

Advantages of the present invention include the following. Private and confidential entry of the PIN is provided. Since the control unit is hand-held at the end of a cable, possible variations in distance and position of a user with respect to the ATM are greatly increased, which facilitates use by a user in a wheelchair or in a vehicle. Visual problems such as reflections of displays are minimized, since the display can be held and viewed at any viewing angle and distance that the user chooses. Purchasers of an ATM constructed in accordance with the present invention can configure the ATM in a variety of ways, facilitating customization.

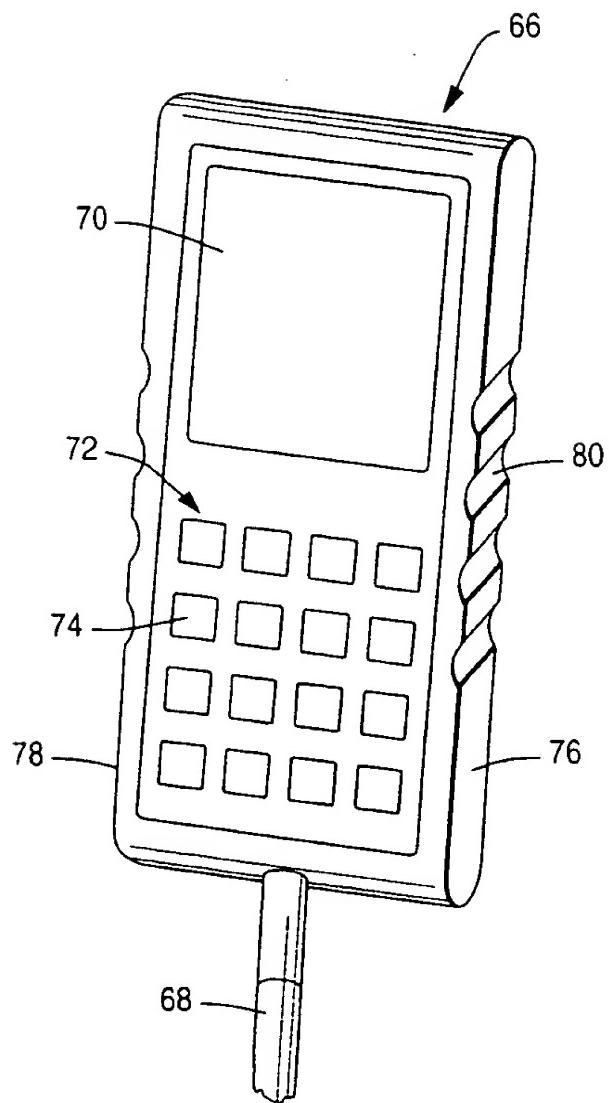
**Claims**

1. An automated teller machine (ATM) having a user interface (40), characterized by a remote control unit (66) which is connected to the ATM by an armoured cable (68) and which can be held by a user, said control unit including a keyboard (72) for entering data, and further characterized by a holder (60) for removably retaining said control unit (66) on the user interface (40). 5
2. An ATM according to claim 1, characterized in that said control unit (66) includes a display screen (70) on which information is provided to a user to assist in carrying out ATM transactions. 15
3. An ATM according to either claim 1 or claim 2, characterized in that said armoured cable (68) is covered with a plastics material. 20
4. An ATM according to any one of the preceding claims, characterized in that at least one side of said control unit (66) is provided with recesses (80) for receiving fingers of a user's hand and thereby facilitating holding of the control unit (66) by the user. 25
5. An ATM according to any one of the preceding claims, characterized by card reader means (48) for reading information carried by a user identifying card inserted by a user in a card entry slot (50) of said reader means. 30
6. An ATM according to claim 5, characterized in that said control unit (66) includes indicator means (82) arranged to provide an indication to a user to pick up said control unit and enter data therein, said indication being provided following insertion of a user identifying card in said card entry slot (50) and a determination being made that the card is valid. 35
7. An ATM according to claim 6, characterized in that said indicator means (82) is an LED type of light. 40
8. An ATM according to any one of claims 5 to 7, characterized in that the ATM is arranged to retain an inserted user identifying card in said card reader (48) until said control unit (66) is returned to said holder (60). 45

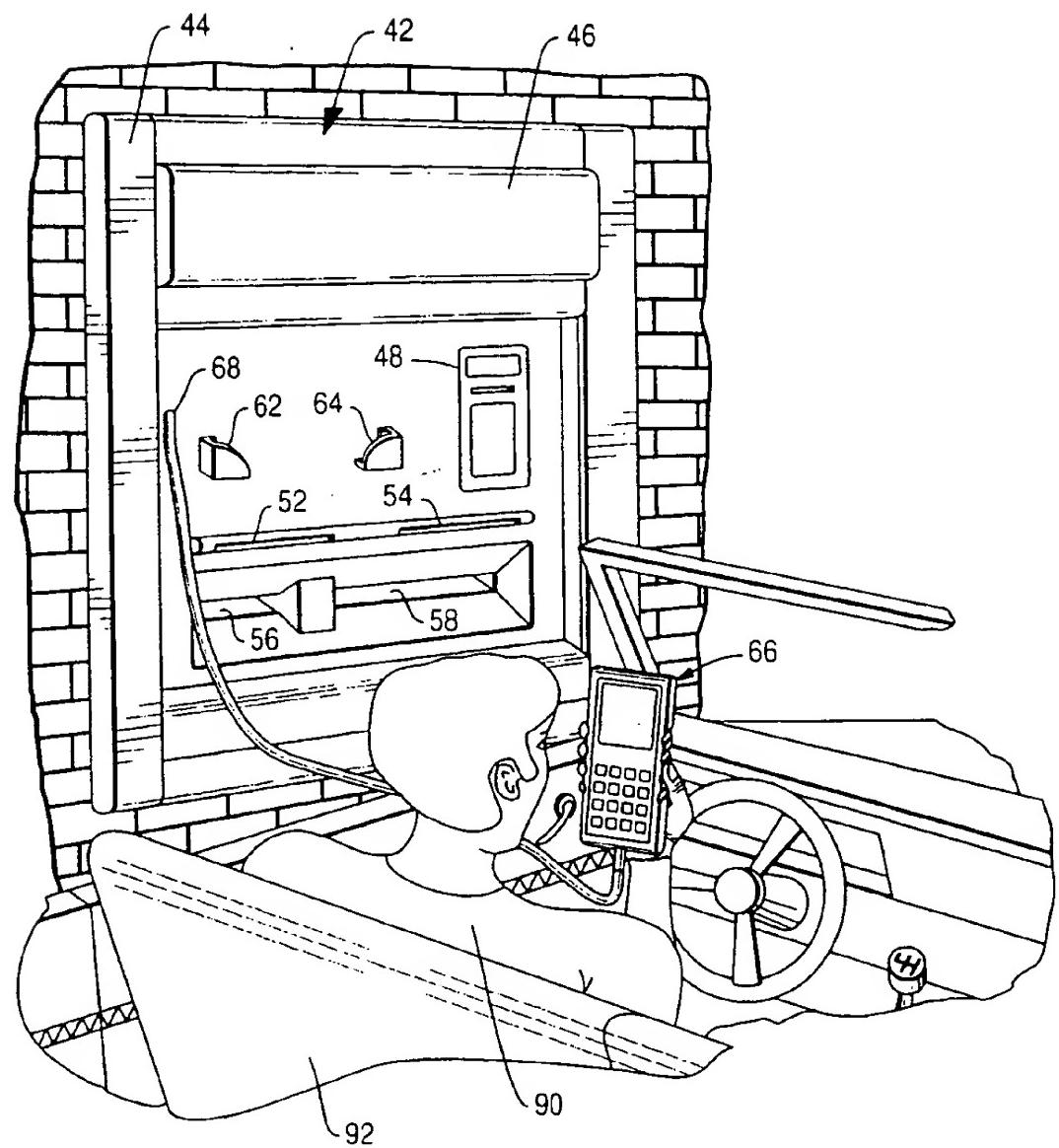
**FIG. 1**



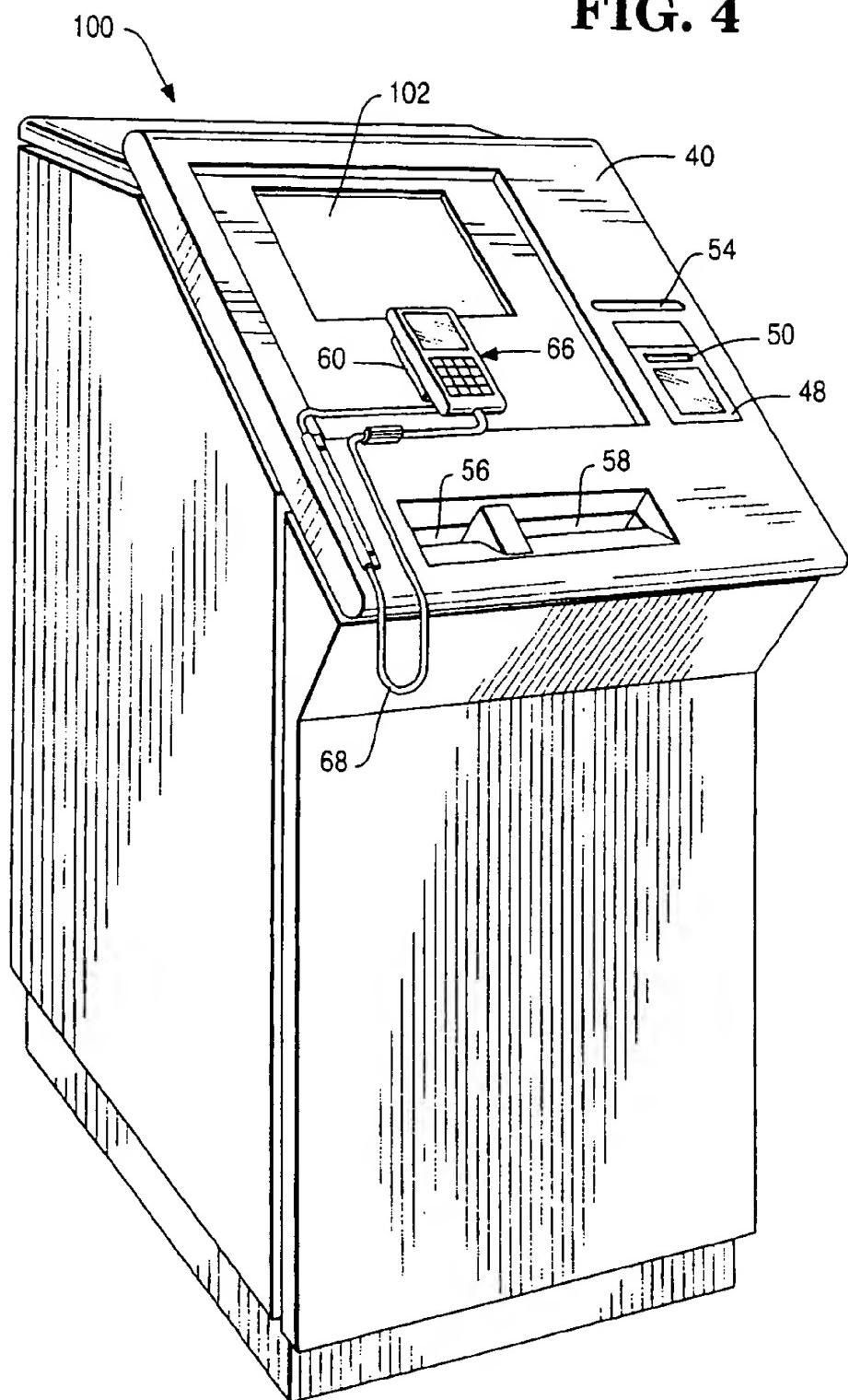
**FIG. 2**



**FIG. 3**



**FIG. 4**





European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 9608

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	RESEARCH DISCLOSURE, no. 291, July 1988 page 475 XP 000006544 'HAND-HELD KEYBOARD DISPLAY ON A RETRACTING CABLE FOR A SELF-SERVICE MACHINE' * the whole document * ---	1,2,5,6, 8
A	PATENT ABSTRACTS OF JAPAN vol. 016 no. 520 (P-1444) ,26 October 1992 & JP-A-04 191994 (OKI ELECTRIC IND CO LTD) 10 July 1992, * abstract *	3
X	---	1,5
A	EP-A-0 196 192 (IMP OIL LTD) 1 October 1986 * page 2, line 32 - page 3, line 32 * * page 9, line 5 - page 12, line 5 * * page 12, line 33 - page 13, line 33; claims 1,8,10,11; figures 1,3-5 *	1,5,8
A	US-A-4 967 366 (KAEHLER DAVID L) 30 October 1990 * abstract; figures 1-3,5,6 * * column 3, line 23 - line 45; claim 1 *	1,5,8
A	EP-A-0 535 417 (IBM) 7 April 1993 * abstract *	2,5-8
A	DE-U-93 08 244 (HEGEDÜS JOHANNES ET.AL.) 5 1 August 1993 * page 1, line 23 - line 31; claim 1 *	1
A	---	
A	EP-A-0 193 505 (INTER INNOVATION AB) 3 September 1986 ---	
A	US-A-4 735 289 (KENYON ANTHONY) 5 April 1988 -----	
The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
THE HAGUE	27 April 1995	Guivol, O
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